Solstice AdminSuite
Print Administration Guide

Sun microsystems

THE NETWORK IS THE COMPUTER™

Please
Recycle

Adobe PostScript™

Please
Recycle

Adobe PostScript

Contents

Figures

Tables

Solstice AdminSuite Print Administration Guide—January 1997

About This Book

The *Solstice AdminSuite Print Administration Guide* provides overview, task, and reference information for setting up and managing SunSoft™ Print Client software on SVR4 (LP) print servers.

This book contains a high-level map of print setup and management tasks available through the Printer Manager application within Solstice™ AdminSuite™. Detailed instructions for using Printer Manager are contained in the Latest *Solstice AdminSuite Administration Guide.*

Solstice AdminSuite is a suite of graphical user interface tools used to perform system administration tasks in the Solaris™ software environment.

Who Should Use This Book

The *Solstice AdminSuite Print Administration Guide* is intended primarily for experienced and junior system administrators who need information on setting up and managing SunSoft Print Client software, though some parts of the book are also intended for other users.

This book assumes that you are familiar with mouse-use terminology, such as Select (click on an item once) and Choose (click on a MENU button on the mouse and slide the cursor to the item you would like to choose).

To use the Printer Manager application within the Solstice AdminSuite product, you should be familiar with UNIX® system software concepts, the network configuration of your site, and your site policies for security.

How This Book Is Organized

The following list gives a brief description of each chapter in this book.

Chapter 1, "SunSoft Print Client Software Overview," illustrates the SunSoft print process and describes the role of the SunSoft print client, print server, and print commands. It also summarizes the advantages of SunSoft Print Client software compared to the LP print service that comes bundled with the Solaris operating environment.

Chapter 2, "Updating SunSoft Print Clients to Access Existing Printers," explains how to convert existing SunOS™ 5.x or 4.x systems at your site to use the SunSoft Print Client software.

Chapter 3, "Setting Up SunSoft Print Client Software With Printer Manager," provides a task map for setting up and managing SunSoft print servers and SunSoft print clients.

Chapter 4, "Modifying the User Environment," tells the user how to create a printer alias file.

Chapter 5, "SunSoft Print Commands Reference," describes the SunSoft print client commands and SunSoft print administration commands.

Chapter 6, "Print Administration Reference," provides reference information about administering the SunSoft print process.

Related Books

The following books contain information related to the topics in the *Solstice AdminSuite Print Administration Guide.*

- *Federated Naming Service Programming Guide* in the *Solaris 2.5 Software Developer AnswerBook*

- *Latest Solstice AdminSuite Administration Guide*

- *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook*

You may need to refer to these books for supplementary information about federated naming conventions, the Solstice AdminSuite applications, and LP print service administration.

What Typographic Changes Mean

Table P-1 describes the typographic changes used in this book.

Table P-1   Typographic Conventions

Typeface or Symbol	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% You have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`machine_name%` **`su`** `Password:`
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type `rm` *filename*.
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in *User's Guide*. These are called *class* options. You *must* be root to do this.

Shell Prompts in Command Examples

Table P-2 shows the default system prompt for the C shell, and the default and root prompts for the Bourne shell.

Table P-2   Shell Prompts

Shell	Prompt
C shell default prompt	`%`
Bourne shell default prompt	`$`
Bourne shell root prompt	`#`

In this book, the C shell default prompt is shown in examples of commands entered by users. The Bourne shell prompts are shown in examples of commands entered by the system administrator.

SunSoft Print Client Software Overview 1≡

This chapter first provides a high-level comparison of the SunSoft Print Client software and the LP print service included in the Solaris operating environment.

The overview next explains how the SunSoft Print Client software processes a print request. It uses an illustration to trace the path of a print request from the time a user submits it until the printer processes it. Each segment of the print process is then described in further detail.

This is a list of the overview information in this chapter.

The Advantages of SunSoft Print Client Software	*page 2*
The SunSoft Print Process	*page 3*
SunSoft Print Clients	*page 4*
Printer Configuration Resources	*page 7*
SunSoft Print Servers	*page 13*

≡ *1*

The Advantages of SunSoft Print Client Software

The SunSoft Print Client software offers several features that make it more powerful and efficient than the LP print service software that is bundled with the Solaris operating environment.

Table 1-1 provides a comparison of features in the bundled LP print service software and SunSoft Print Client software.

Table 1-1   A Comparison of Bundled LP Print Service and SunSoft Print Client Software

Feature	In Bundled LP Print Service?	In SunSoft?	Advantages in SunSoft
Use of a name service (NIS or NIS+)	No	Yes	A name service enables you to store printer configuration information in one central location.
			You can add, modify, or delete printer information for all SunSoft print clients on the network by entering the information in the name service.
Ability to copy a master print configuration file to print clients	No	Yes	If you don't use a name service, you can still save time in adding, modifying, and deleting printers by making a master printer configuration file and copying it to SunSoft print clients.
Ability to send print requests directly to a print server	No	Yes	SunSoft print clients send their requests directly to the print server, without local spooling.

The SunSoft Print Process

You'll be able to administer printing more effectively if you know how the SunSoft Print Client software processes a print request.

Figure 1-1 illustrates the path of a print request from the time the user initiates the request until it is printed.

| SunSoft Print Client | Print Request | SunSoft Print Client Command Processing | SunSoft Print Server | Printer | Printed Output |
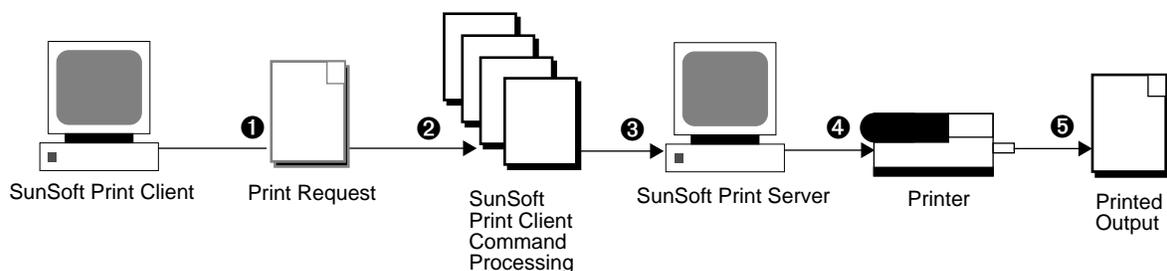
Figure 1-1   Overview of the SunSoft Print Process

❶ A user submits a print request from a SunSoft print client by using a SunSoft print client command.

❷ The print client command checks a hierarchy of print configuration resources to determine where to send the print request.

❸ The print client command sends the print request directly to the appropriate print server. A SunSoft print server can be any server that accepts BSD printing protocol, including SVR4 (LP) print servers and BSD print servers (such as the SunOS 4.x BSD print server).

❹ The print server sends the print request to the appropriate printer.

❺ The print request is printed.

☰ *1*

SunSoft Print Clients

This section of the overview focuses on the *print client*, a system that can send print requests to a print server. The discussion involves the closely related topic of print commands, which enable the print client to initiate print requests.

Figure 1-2 highlights the part of the print process in which the user submits a print request from a SunSoft print client.
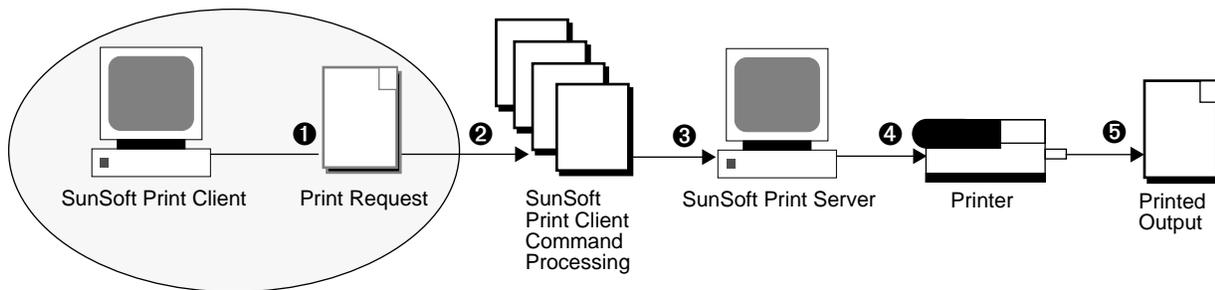
Figure 1-2   The User Submits a Print Request from a SunSoft Print Client

What Is a SunSoft Print Client?

A system becomes a SunSoft print client when you install the SunSoft print client software and enable access to remote printers on the system. The SunSoft print client commands have the same names and produce the same output as the Solaris print commands. However, the SunSoft commands perform their tasks using a new method that improves printing performance.

How the SunSoft Print Client Commands Improve the Print Process

With the SunSoft print client commands, the client system becomes a more effective print client: the commands use a greater number of options to locate printer configuration information, and the client communicates directly with the print server. In the Solaris operating environment, the print client did not have these advantages.

The SunSoft print client commands:

* **Use more options to locate printer information** – The SunSoft print client commands check the following resources to locate printers and printer configuration information:
  * The command-line interface
  * A printer alias file in the user's home directory
  * Local (print client) configuration files
  * A network (shared) configuration file, if you use a name service

  By contrast, the print commands in Solaris use fewer options to locate printer information. Also, the Solaris print commands do not check information on the network—they do not support a name service.

* **Enable clients to submit requests directly to the print server** – The SunSoft print client sends its requests to the print server's queue; the client does not have a local queue. The client writes the print request to a temporary spooling area only if the print server is not available or if an error occurs. This streamlined path to the server decreases the print client's use of resources, reduces the chances for printing problems, and improves performance.

  By contrast, the Solaris print commands depend on a local print daemon to communicate with the print server. The Solaris commands write every print request to a local spooling area on the print client and notify another set of processes to transfer the request even if the print server is available and there are no error conditions.

≡ *1*

A Quick Look at the SunSoft Print Client Commands

When you install the SunSoft Print Client software on a system, some of the print commands in Solaris are replaced by SunSoft print client commands.

The SunSoft print client commands have the same names, accept the same command-line options, generate the same output, and work with the same tools as the Solaris print commands. Table 1-2 lists the SunSoft print client commands.

Table 1-2   SunSoft Print Client Commands

Command	Description
`lp`, `lpr`	Enables you to submit print requests to a print server
`lpstat`, `lpq`	Checks print queues and the status of printers
`cancel`, `lprm`	Cancels print requests
`lpmove`	Moves print requests from one printer to another

For more detailed information about the SunSoft print client commands, see Chapter 5, "SunSoft Print Commands Reference."

Printer Configuration Resources

This section describes the resources that the SunSoft print client commands use to locate printer names and printer configuration information.

The SunSoft print client commands can use a *name service*, which is a network (shared) resource for storing printer configuration information for all printers on the network. The name service (NIS or NIS+) simplifies printer configuration maintenance: When you add a printer in the name service, all SunSoft print clients on the network can access it.

Figure 1-3 highlights the part of the print process in which the SunSoft print client commands check a hierarchy of printer configuration resources to determine where to send the print request.
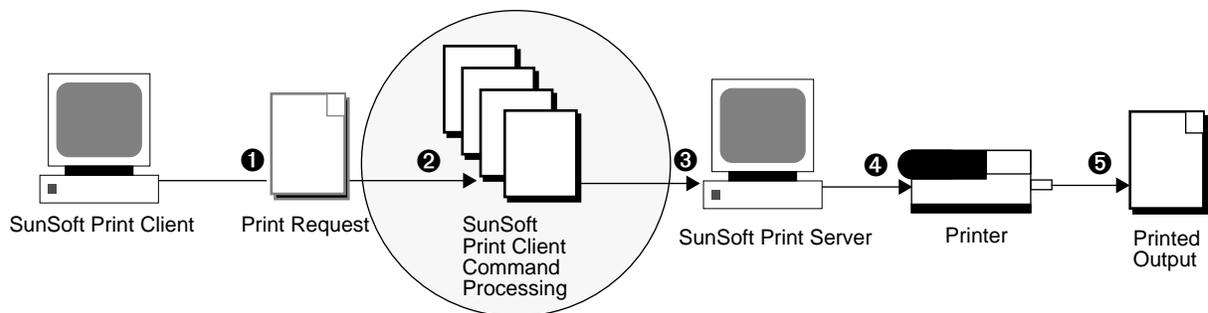
Figure 1-3   The SunSoft Print Client Commands Check Resources to Locate Printers

The Advantages of SunSoft Print Client Commands in Locating Printers

The print configuration resources are a key component of the SunSoft Print Client software: They increase printing efficiency because of the method they use to locate printer information. To illustrate the advantages, the next sections compare the Solaris 2.x and SunSoft methods to locate printers.

How the Solaris 2.x Print Software Locates Printers

As shown in Figure 1-4, the print command in the Solaris 2.x (SunOS 5.x) operating environment uses only local resources to locate printers and printer configuration information.
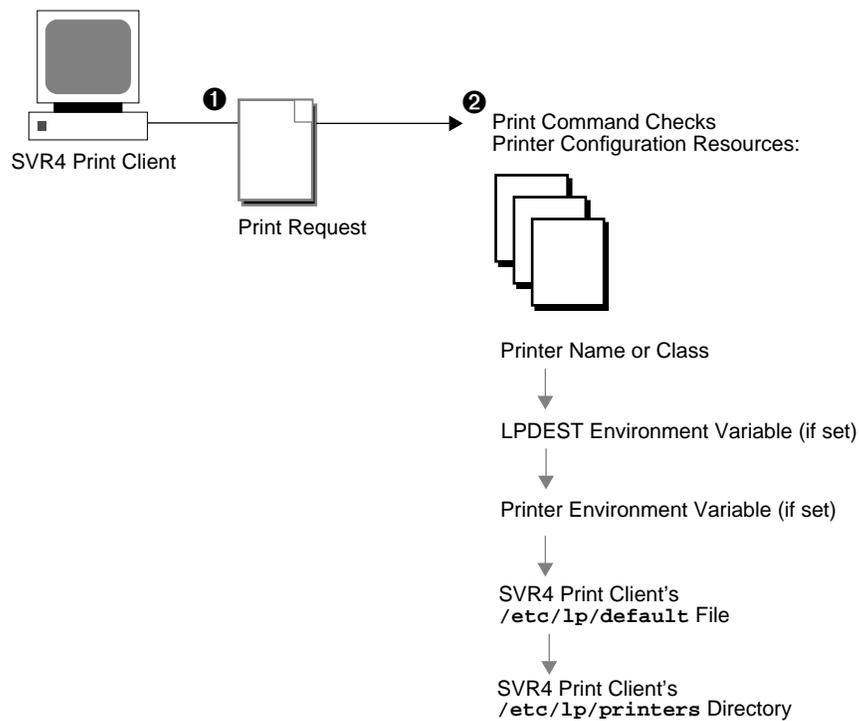
Figure 1-4   How the Solaris 2.x Print Software Locates Printers

❶ A user submits a print request from an SVR4 print client by using the `lp` or `lpr` command. The user can specify a destination printer name or printer class with either the `lp -d` or `lpr -P` command and option, as shown in these examples:

```
% lp -d neptune
```

```
% lpr -P pluto
```

❷ The print command locates a printer and printer configuration information.
- It checks to see if the user specified a destination printer name or printer class when submitting the print request.
- If the user didn't specify a printer name or class, the software checks the SVR4 print client's `/etc/lp/default` file for a default printer name.
- When the print client software finds the printer name or class, or has located a default printer, it checks the SVR4 print client's `/etc/lp/printers` directory for configuration information on the printer or printer class.

There are two main disadvantages in the Solaris 2.x method to locate printers:

- There is no central file for storing printer information. If you want to add, modify, or delete a printer for all print clients on the network, you have to change each client's printer configuration files individually.

- You cannot make a master `/etc/lp/printers` directory with all printers on the network and copy it to print clients.

How the SunSoft Print Client Software Locates Printers

As shown in Figure 1-5, the SunSoft print client commands use more options to locate printers and printer configuration information.
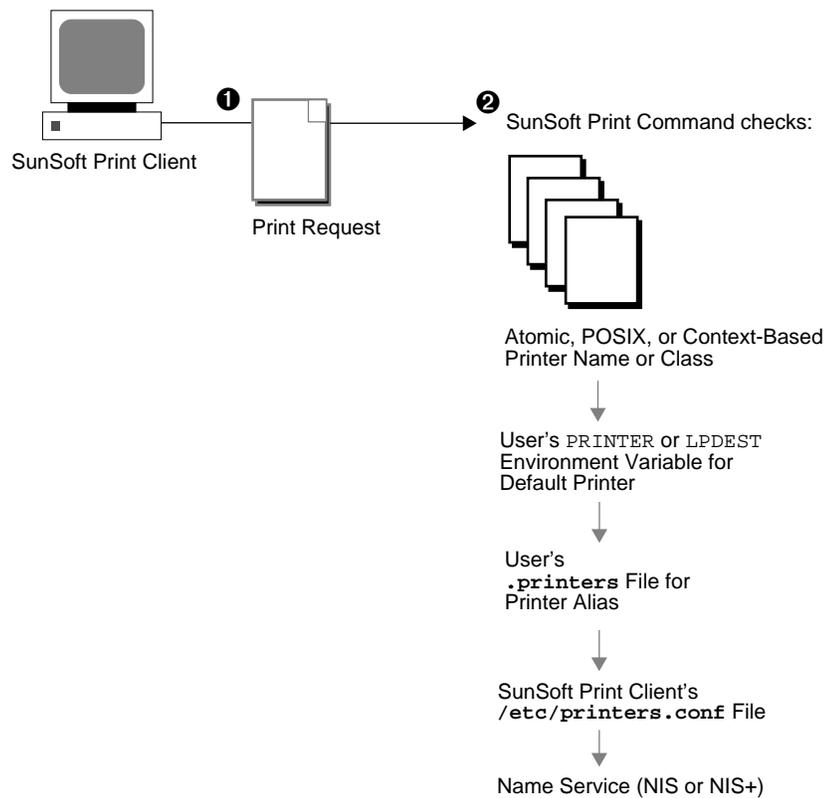
Figure 1-5 How the SunSoft Print Client Software Locates Printers

❶ A user submits a print request from a SunSoft print client by using the `lp` or `lpr` command. The user can specify a destination printer name or class in any of three styles:

Solstice AdminSuite Print Administration Guide—January 1997

- Atomic style, which is the print command and option followed by the printer name or class, as shown in the next example.

```
% lp -d neptune
```

- POSIX style, which is the print command and option followed by *server:printer*, as shown in the following example.

```
% lpr -P galaxy:neptune
```

- Context-based style, as defined in the *Federated Naming Service Programming Guide* in the *Solaris 2.5 Software Developer AnswerBook*, shown in the next example.

```
% lp -d thisorgunit/service/printer/printer-name
```

❷ The print command locates a printer and printer configuration information as follows:
- It checks to see if the user specified a destination printer name or printer class in one of the three valid styles.
- If the user didn't specify a printer name or class in a valid style, the command checks the user's PRINTER or LPDEST environment variable for a default printer name.
- If neither environment variable for the default printer is defined, the command checks the .printers file in the user's home directory for the _default printer alias.
- If the command does not find a _default printer alias in the .printers file, it then checks the SunSoft print client's /etc/printers.conf file for configuration information.
- If the printer is not found in the /etc/printers.conf file, the command checks the name service (NIS or NIS+), if any.

These are the advantages of the SunSoft method to locate printers:

- You can use a name service (NIS or NIS+) to store printer information in one central location. This is the single most important feature of the SunSoft Print Client software. If you want to add a printer and make it available to all SunSoft print clients on the network, all you have to do is enter the

printer information in the name service. The same principle applies to modifying and deleting printers. The printer information in the name service is available to all SunSoft print clients.

- Users can manipulate their `.printers` file to customize printer information. Even though SunSoft print clients know about the printers that are listed in the name service, you can customize the clients' printer configuration files to use printer aliases and to find only certain printers when canceling print requests or getting status information.

- If you don't use a name service, you can still decrease the amount of time it takes to set up and administer printing by creating a master of the `/etc/printers.conf` file with all printers on the network and copying that file to SunSoft print clients. For further information about using the `/etc/printers.conf` file, see Chapter 2, "Updating SunSoft Print Clients to Access Existing Printers."

When to Use a Name Service

The comparison of the Solaris and SunSoft print configuration resources on page 7 points out the advantages you can gain by using NIS or NIS+ with the SunSoft Print Client software. A name service provides the most efficient way to add, modify, and delete printer configuration information for a network.

Almost every site can benefit significantly from using a name service. One exception might be a very small network with only a few printers and print clients.

SunSoft Print Servers

This section of the overview focuses on the *print server*, a system that has a local printer connected to it and makes the printer available to other systems on the network.

Figure 1-6 highlights the part of the SunSoft print process in which the print server sends the print request to the printer.
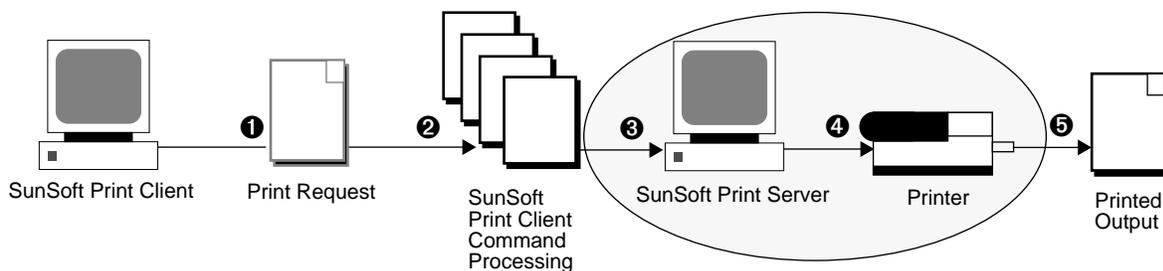
Figure 1-6   The SunSoft Print Server Sends a Print Request to the Printer

The BSD Printing Protocol

The SunSoft print client commands use the BSD printing protocol. One of the big pluses of this protocol is that it can communicate with a variety of print servers:

• SunOS 4.x BSD (lpd) print servers
• SunOS 5.x SVR4 (LP) print servers
• Any other print server or printer that accepts the BSD printing protocol

The BSD printing protocol is an industry standard. It is widely used and it provides compatibility between different types of systems from various manufacturers. Sun has chosen to support the BSD printing protocol to provide interoperability in the future.

≡ *1*

By comparison, the print commands in Solaris support both the BSD and System V printing protocols. System V protocol is not as widely used and it does not provide compatibility with BSD print servers.

Where to Go From Here

If you need to update SunSoft print clients to access existing printers at your site, go to Chapter 2, "Updating SunSoft Print Clients to Access Existing Printers," for step-by-step instructions.

If you are setting up new printers with SunSoft Print Client software, see Chapter 3, "Setting Up SunSoft Print Client Software With Printer Manager," for information on setting up printing at your site.

Updating SunSoft Print Clients to Access Existing Printers 2≡

This chapter explains how to convert the printer configuration information from SunOS 5.x and 4.x systems at your site and copy this information to SunSoft print clients so they can access existing printers.

This is a list of the step-by-step instructions in this chapter.

How to Convert Printer Information From a SunOS 5.x System	*page 19*
How to Convert Printer Information From a SunOS 4.x System	*page 19*
How to Use the /etc/printers.conf File to Load NIS	*page 20*
How to Use the /etc/printers.conf File to Load NIS+	*page 20*

If you're installing new printers, see Chapter 3, "Setting Up SunSoft Print Client Software With Printer Manager," for information on setting up SunSoft Print Client software at your site.

Note – If you have only a few existing printers, it may be easier to add access to the printers by using Printer Manager rather than convert the printer configuration information and distribute it to print clients. See Chapter 3, "Setting Up SunSoft Print Client Software With Printer Manager," for information on adding access to printers.

☰ 2

Updating SunSoft Print Clients With Printer Information

Table 2-1 provides an overview of the tasks you perform to convert the printer configuration information from SunOS 5.x and 4.x systems at your site and distribute the information to SunSoft print clients so they can access existing printers. You use the command line interface to accomplish each task.

Table 2-1   Task Map: Updating SunSoft Print Clients to Access Existing Printers

Activity	Description	For Instructions, Go To	
Convert Existing Printer Configuration Information	**Convert Printer Configuration Information From a SunOS 5.x System** If your site uses SunOS 5.x software, convert the printer configuration information in a 5.x system's `/etc/lp/printers` directory to the SunSoft `/etc/printers.conf` configuration file. This is usually a one-time task.	▼ How to Convert Printer Information From a SunOS 5.x System	page 19
	Convert Printer Configuration Information From a SunOS 4.x System If your site uses SunOS 4.x software, convert the printer configuration information in a 4.x system's `/etc/printcap` file to the SunSoft `/etc/printers.conf` configuration file. This is usually a one-time task.	▼ How to Convert Printer Information From a SunOS 4.x System	page 19

Table 2-1   Task Map: Updating SunSoft Print Clients to Access Existing Printers

Activity	Description	For Instructions, Go To	
Enable SunSoft Print Clients to Access Existing Printers	**Copy a Master** `/etc/printers.conf` **File to Clients** If you don't use a name service, copy the printer configuration information in the converted system's `/etc/printers.conf` file to other SunSoft print clients. You will probably perform this task each time you install, modify, or delete printers on the network.		
	Use the `/etc/printers.conf` **File to Load NIS** If you use NIS, copy the printer configuration information in the converted system's `/etc/printers.conf` file to the NIS master file. This is usually a one-time task.	▼ How to Use the /etc/printers.conf File to Load NIS	page 20
	Use the `/etc/printers.conf` **File to Load NIS+** If you use NIS+, copy the printer configuration information in the converted system's `/etc/printers.conf` file to the NIS+ master file. This is usually a one-time task.	▼ How to Use the /etc/printers.conf File to Load NIS+	page 20

$\equiv$ *2*

Converting Existing Printer Configuration Information

This section explains how to convert the printer configuration information from a SunOS 5.x or 4.x system to the `/etc/printers.conf` printer configuration file used in the SunSoft Print Client software. You'll use one of two new print administration commands to automate the conversion task:

- The `conv_lp` command enables you to convert information in the `/etc/lp/printers` directory on a SunOS 5.x system to entries in the system's `/etc/printers.conf` file. See "How to Convert Printer Information From a SunOS 5.x System" on page 19 for instructions.

Note – You can also choose to automatically convert existing printer configuration information to the `/etc/printers.conf` file when you install the SunSoft print software on a SunOS 5.x system.

- The `conv_lpd` command enables you to convert information in a `/etc/printcap` configuration file from a SunOS 4.x system to entries in a `/etc/printers.conf` file. See "How to Convert Printer Information From a SunOS 4.x System" on page 19 for instructions.

With these commands, you should create a master `/etc/printers.conf` file that includes the existing printers at your site. You can then copy the master file to all the SunSoft print clients (if you are not using a name service) or by loading it into NIS or NIS+. This is a good way to initially enable all the new SunSoft print clients access to the existing printers at your site.

!

Caution – If you are using the NIS or NIS+ name service to configure printer information, do not use a `/etc/printers.conf` file on your SunSoft print clients. A SunSoft print client uses the `/etc/printers.conf` file first to locate a printer; however, the `/etc/printers.conf` file may conflict with the printer information in the NIS or NIS+ maps and cause unexpected results. To avoid this problem, remove the `/etc/printers.conf` file on SunSoft print clients when you want them to use NIS or NIS+ for printer information.

▼ How to Convert Printer Information From a SunOS 5.x System

1. **Log in as root on a system that has SunOS 5.x software and SunSoft Print Client software installed.**

2. **Convert the printer configuration information in the system's** `/etc/lp/printers` **directory to the** `/etc/printers.conf` **file.**

```
# /usr/lib/print/conv_lp
```

▼ How to Convert Printer Information From a SunOS 4.x System

1. **Copy the** `/etc/printcap` **file from a SunOS 4.x system to a SunOS 5.x system that has the SunSoft Print Client software.**

2. **Log in as root on the SunOS 5.x system to which you copied the** `/etc/printcap` **file.**

3. **Convert the printer configuration information in the** `/etc/printcap` **file to the** `/etc/printers.conf` **file.**

```
# /usr/lib/print/conv_lpd
```

Enabling SunSoft Print Clients to Access Existing Printers

Once you create a master `/etc/printers.conf` file that includes the existing printers at your site, you can enable all the SunSoft print clients to access the existing printers in two ways.

- If you don't use a name service, you can copy the master `/etc/printers.conf` file to all SunSoft print clients.

- If you use a name service, you can use the master `/etc/printers.conf` file to load the NIS or NIS+ master file, where the information becomes available to all SunSoft print clients.

▼ How to Use the `/etc/printers.conf` File to Load NIS

1. **Log in as root on the system that contains the** `/etc/printers.conf` **file to be copied to the NIS master server.**

2. **Copy the system's** `/etc/printers.conf` **file to the NIS master server's** `/etc` **directory.**

3. **Copy the** `usr/lib/print/Makefile.yp` **makefile to the NIS master server's** `/var/yp` **directory.**

4. **Log in as root on the NIS master server.**

5. **On this system, specify how to process the files.**

```
# make -f /var/yp/makefile -f /var/yp/Makefile.yp printers.conf
```

▼ How to Use the `/etc/printers.conf` File to Load NIS+

1. **Make sure you are a member of the NIS+ admin group. You must have the appropriate privileges to perform this task.**

2. **Log in as root on the system that contains the** `/etc/printers.conf` **file to be copied to the NIS+ master file.**

3. Copy the system's `/etc/printers.conf` **file to the NIS+ master file.**

```
# fncreate_printer -f /etc/printers.conf thisorgunit/service/printer
```

See the *Federated Naming Service Programming Guide* in the *Solaris 2.5 Software Developer AnswerBook* if you need information about entering this command.

Where to Go From Here

After you have given SunSoft print clients access to existing printers, users may want to set up the `.printers` file in their home directory to contain custom printer aliases. For step-by-step instructions, go to Chapter 4, "Modifying the User Environment."

≡ 2

Setting Up SunSoft Print Client Software With Printer Manager 3≡

This chapter provides an overview of the procedures for setting up and managing SunSoft Print Client software by using Printer Manager, a graphical user interface within the Solstice AdminSuite software.

Step-by-step instructions for all Printer Manager tasks are contained in the latest *Solstice AdminSuite Administration Guide.*

For high-level information on print administration, see Chapter 6, "Print Administration Reference." For step-by-step instructions on administering printing, see the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook.*

For overview information about the print process, see Chapter 1, "SunSoft Print Client Software Overview."

Note – You can set up printing by using LP print service commands instead of Printer Manager. For detailed examples, see the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook.*

≡ *3*

Setting Up and Managing SunSoft Print Client Software

Table 3-1 gives you an overview of the tasks for using Printer Manager to set up and manage printing services with the SunSoft Print Client software.

Table 3-1   Task Map: Setting Up and Managing SunSoft Print Client Software

Activity	Description	For Instructions, Go To
Install a Printer on a Print Server	**Install a Printer** Install a printer on the system to which it is attached. This procedure tells the system about the printer so the system can act as a print server. If you use a name service, this task also makes the printer available to all SunSoft print clients.	Chapter 9, "Setting Up SunSoft Print Client Software With Printer Manager" in the latest ***Solstice AdminSuite Administration Guide***
Give Print Clients Access to a Printer	**Add Access to a Printer** Give SunSoft print clients access to a printer that is installed on a print server.	
Modify Existing Information for a Printer	**Modify Printer Information** Modify the current configuration information for a printer.	
Delete Access to a Printer	**Delete Access to a Printer** Delete access to a printer from the NIS or NIS+ master file or from each specified print client's `/etc/printers.conf` file if you do not have a name service.	
	Delete a Printer From a Print Server Delete a printer from the print server's `/etc/printers.conf` file. This step applies only if you are not using a name service.	

Modifying the User Environment 4≡

This chapter explains how to customize your home directory to use printer aliases. The `_default` alias allows you to establish a custom name for your default printer. The `_all` alias allows you to define all printers that will be affected when you cancel print requests or check the status of printers.

This chapter contains the following step-by-step instructions.

≡ *4*

Setting Up Your `.printers` *File*

There is no need to set up a `.printers` file in your home directory if you don't need customized printer information. However, the `.printers` file enables you to establish your own custom printer aliases. You can use the alias `_default` to make a printer the default and also set up a special alias `_all` to define a list of printers affected when you cancel a print request or check the status of printers.

Keep in mind that after the SunSoft print commands check your home directory to locate printer configuration information before they check the name service. This means you can tailor your home printer configuration file to use custom printer information rather than the shared information in the name service.

See the `printers(4)` man page for detailed information about the `.printers` file.

▼ How to Set Up Your `.printers` File

1. **Log in on your system as yourself.**

2. **Start the file editor you want to use.**
   You'll use the editor to create a `.printers` file in your home directory.

3. **(Optional) Set up the** `_default` **alias to make a specific printer your default printer, using an entry similar to the one shown in the following example.**

```
_default printer
```

4. **(Optional) Set up the** `_all` **alias to define the printers affected when you cancel a print request or check the status of printers, using an entry similar to the one shown in the next example.**

> `_all` *printer1, printer2, printer3*

5. **Save the file as** `.printers` **in your home directory.**

≡ 4

Solstice AdminSuite Print Administration Guide—January 1997

SunSoft Print Commands Reference 5≡

This chapter provides reference information on the SunSoft print client commands and on the SunSoft print administration commands.

This is a list of the reference information in this chapter.

29

≡ *5*

What the SunSoft Print Client Commands Do

This section briefly describes the functions of the SunSoft print client commands.

Submitting a Print Request

The `lp` and `lpr` commands enable you to submit a print request. When you submit a request, the command locks the file to be printed and attempts to send it directly to the print server. If the command can't lock the file or the destination printer is not responding, the command uses a temporary spooling area (`/var/spool/print`) on the print client to hold the print request, then becomes a daemon to perform the transfer later. After all the print requests in the spooling area are transferred, the daemon exits.

Checking Print Queues and the Status of Printers

With the `lpstat` and `lpq` commands, you can check print queues and the status of printers. These commands display the print server's queue and any local print requests on the print client that are waiting to be transferred to the print server.

One difference between these two commands is that the `lpstat` command parses the print queue to display the format you request. If `lpstat` can't parse a print queue in the requested format, it displays the queue in the format the print server used.

Canceling a Print Request

The `cancel` and `lprm` commands enable you to cancel, or remove, a print request. Either command first removes any local copies of a print request awaiting transfer to the print server, then sends a cancel request to the print server.

Moving a Print Request

If a client's print request hasn't been sent to the print server, you can use the `lpmove` command to move the request to another print server. This command also enables you to move print requests that are in the print server's queue to another printer.

What the SunSoft Print Administration Commands Do

This section explains the functions of the print administration commands included in the SunSoft Print Client software.

Converting Printer Configuration Information

The `conv_lp` command automates the process of converting printer configuration information from a SunOS 5.x system to the system's `/etc/printers.conf` file.

Likewise, the `conv_lpd` command enables you to convert printer configuration information from a SunOS 4.x system to the system's `/etc/printers.conf` file.

See Chapter 2, "Updating SunSoft Print Clients to Access Existing Printers" for details on using these commands.

Note – The `conv_lp` and `conv_lpd` commands are located in the `/usr/lib/print` directory.

Viewing a Printer's Configuration Information

The `lpget` command enables you to view configuration information for a specific printer.

Entering Print Configuration Information

You can use the `lpset` command to add, modify, and delete print configuration information in the SunSoft print configuration database.

$\equiv$ *5*

Print Administration Reference 6 ≡

This chapter contains high-level information about administering printing. This is a list of the reference information in this chapter.

Setting Print Definitions	*page 34*
Administering Printing	*page 41*

For overview information about the print process, see Chapter 1, "SunSoft Print Client Software Overview."

For step-by-step instructions on print administration tasks, see the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook.*

Depending on your site's requirements and the types of printers you have on the network, you may have to set up and manage printer-specific features of the LP print service. For example, you can assign different print wheels, filters, and forms to different printers. See the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook* for step-by-step instructions on how to set up and administer character sets, print filters, forms, and fonts.

≡ *6*

Setting Print Definitions

Establishing definitions for the printers on your network is an ongoing task that enables you to provide a more effective print environment for users. For example, you can assign printer descriptions for all your site's printers to help users find where a printer is located, or you can define a class of printers to provide the fastest turnaround for print requests.

The `lpadmin` command enables you to set all of the print definitions, while Printer Manager enables you to set only some of them when you install or modify a printer.

Table 6-1 lists the print definitions and shows whether you can assign the definition with Printer Manager.

Table 6-1   Print Definitions Set With Printer Manager

Print Definition	Can You Set It With Printer Manager?
Printer description	Yes
Printer port	Yes
Printer type	Yes
File contents	Yes, but with less functionality than the `lpadmin` command
Fault notification	Yes, but with less functionality than the `lpadmin` command
Default printer destination	Yes
Printing banner pages	Yes, but with less functionality than the `lpadmin` command
Limiting user access to a printer	Yes, but with less functionality than the `lpadmin` command
Printer classes	No
Fault recovery	No

Printer Description

You can assign a description to a printer by using the `lpadmin -D` command or Printer Manager. The description you assign a printer should contain information that will help users identify the printer. You might include the room number where the printer is located, the type of printer, the manufacturer, or the name of the person to call if there are printing problems.

After you set a printer description, users can then look at the description by using the following command:

```
% lpstat -D -p printer
```

Printer Port

When you install a printer or later change its setup, you can specify the device, or the printer port to which the printer is connected, by using the `lpadmin -v` command or Printer Manager.

In Printer Manager, you can select either `/dev/term/a` or `/dev/term/b`, or choose Other and specify any port name that the print server recognizes. These options give you as much flexibility as the `lpadmin` command.

Printer Type

The printer type identifies the `terminfo` database entry that contains various control sequences for the printer. You can specify the printer type by using the `lpadmin -T` command or Printer Manager.

With Printer Manager, you can only specify the printer type when you are installing a printer. If you want to change the type of an existing printer, you must delete the printer and reinstall it through Printer Manager, otherwise change the printer type by using the `lpadmin` command. Printer Manager enables you to select a specific printer type from a menu or choose Other and specify any printer type. This provides you as much capability as the `lpadmin` command.

≡ 6

File Contents

Print filters convert the content type of a file to a content type that is acceptable to the destination printer. The *file contents* tells the LP print service the type of file contents that can be printed directly, without filtering. To print without filtering, the necessary fonts must also be available in the printer. (You must set up and use filtering for other types of files.)

You can specify the file contents for a printer by using the `lpadmin -I` command or Printer Manager.

In Printer Manager, you can select a specific file contents type from a menu. Not all available file contents types are listed on the menu. You must use the `lpadmin` command to specify file content types that are not included on the Printer Manager menu.

Fault Notification

If you choose, the print service can notify you when it detects a printer fault. You can select any of the following methods to receive printer fault notification with the `lpadmin -A` command or with Printer Manager:

- Write a message to the terminal on which root is logged in
- Electronic mail to root
- No notification

However, the `lpadmin -A` command offers you an additional option of receiving a message specified by the program of your choice. It also enables you to selectively turn off notification for an error that you already know about.

Unless you specify a program to deliver fault notification, the content of the fault alert is a predefined message that says the printer has stopped printing and needs to be fixed.

Also, if you choose not to send any fault notification, you need a way to find out about printing faults so you can correct the problem. The LP print service will not continue to use a printer that has a fault. In addition to alerts for printer faults, you can also provide alerts that tell the system administrator to mount print wheels, font cartridges, and forms when print requests require them.

6≡

Default Printer Destination

You can specify a default printer destination for a system so you don't need to type the printer name when using the SunSoft print commands. Before you can designate a printer as the default, the printer must be known to the print service on the system. You can set a system's default printer destination by setting any of the following:

- `LPDEST` environment variable
- `PRINTER` environment variable
- `_default` in `.printers` file
- `_default` in `/etc/printers.conf` file (`lpadmin -d` command)

When an application provides a printer destination, that destination is used by the print service, regardless of whether you have set a system's default printer destination. If an application doesn't provide a printer destination or if you don't provide a printer name when using a print command, the print command searches for the default printer in a specific order. Table 6-2 shows the search order for a system's default printer destination.

Table 6-2   Search Order for Default Printer Destinations

Search Order	Using `lp` Command	Using `lpr`, `lpq`, and `lprm` Commands
First	`LPDEST` variable	`PRINTER` variable
Second	`PRINTER` variable	`LPDEST` variable
Third	`_default` in `.printers` file	`_default` in `.printers` file
Fourth	`_default` in `/etc/printers.conf` file	`_default` in `/etc/printers.conf` file

Printing Banner Pages

A banner page identifies who submitted the print request, the print request ID, and when the request was printed. A banner page can also have an optional title that the requester can use to better identify a printout.

Banner pages make identifying the owner of a print job easy, especially when many users submit jobs to the same printer. Printing banner pages uses more paper, however, and may not be necessary if a printer has only a few users. In

some cases, printing banner pages is undesirable. For example, if a printer has special paper or forms mounted, like paycheck forms, printing banner pages may cause problems.

By default, the print service forces banner pages to be printed. However, you can give users a choice to turn off printing of a banner page when they submit a print request. You can set this choice through the `lpadmin` command or through Printer Manager. If you give the users a choice, they have to use the `-o nobanner` option to turn off printing of a banner page.

Also, you can turn off banner pages on a printer so banner pages are never printed. This is important if you have a situation where you don't need or want banner pages. You can turn off banner page printing by using the command-line interface only. For step-by-step command-line instructions, see the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook.*

Limiting User Access to a Printer

You may want to control which users can access some or all of the available printers. For example, you may want to prevent some users from printing on a high-quality printer to minimize expense. To restrict user access to printers, you can create *allow* and *deny* lists using the `lpadmin -u` command. (Printer Manager enables you to create only allow lists.) If you create neither, a printer is available to all users who can access the printer.

An allow list contains the names of users allowed access to the specified printer; a deny list contains the names of users denied access to the specified printer.

The rules for allow and deny lists are:

When You ...	Then ...
Do not create allow and deny lists, or if you leave both lists empty	All users may access the printer.
Specify `all` in the allow list	All users may access the printer.
Specify `all` in the deny list	All users, except root and lp, are denied access to the printer.
Make any entry in the allow list	The deny list is ignored. Only those users who are listed can access the printer.
Create a deny list, but you do not create an allow list or you leave the allow list empty	Users who are listed in the deny list are denied access to the printer.

It is best to create allow and deny lists on the print server only and not set up allow and deny lists on print clients. If you create allow and deny lists on the print server only, the print server exclusively controls user access to printers. The benefit of using this strategy is that you do not have to coordinate changes to the print server's allow and deny lists with print clients.

Printer Classes

The print service enables you to group several local printers into one class. You can perform this task only by using the `lpadmin -c` command.

Note – Print classes are not fully functional in a distributed environment; however, this service does work for printers attached to the print server.

When you have set up a printer class, users can then specify the class (rather than individual printers) as the destination for a print request. The first printer in the class that is free to print is used. The result is faster turnaround because printers are kept as busy as possible.

There are no default printer classes known to the print service; printer classes exist only if you define them. Here are some ways you could define printer classes:

- By printer type (for example, PostScript)
- By location (for example, 5th floor)
- By work group or department (for example, Accounting)

Alternatively, a class might contain several printers that are used in a particular order. The LP print service always checks for an available printer in the order in which printers were added to a class. Therefore, if you want a high-speed printer to be accessed first, you would add it to the class before you add a low-speed printer. As a result, the high-speed printer would handle as many print requests as possible. The low-speed printer would be reserved as a backup printer when the high-speed printer is in use.

Note – Print requests are balanced between printers in a class only for local printers. When a print client attempts to print to a class of printers on a print server, only the first printer defined in the class is used.

Class names, like printer names, must be unique and may contain a maximum of 14 alphanumeric characters and underscores.

You are not obligated to define printer classes. You should add them only if you determine that using printer classes would benefit the network users.

Fault Recovery

You can define the fault recovery options for a printer only by using the `lpadmin -F` command.

Printer faults can be as simple as running out of paper or needing to replace a toner cartridge. Other more serious problems may include complete printer failure or power failure. After you fix a printer fault, the print request that was active when the fault occurred begins printing in one of three ways:

- Starts printing from the beginning

- Continues printing from the top of the page where the printing stopped

- After you enable the printer, continues printing from the top of the page where the printing stopped

A print filter is required to continue printing from the top of a page where the printing stopped. A print filter records the control sequences used by the printer to track page boundaries, which the default filters used by the print service cannot do. You will be notified by the print service if recovery cannot proceed with the specified print filter. For information about writing filters, see the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook.*

If you want printing to resume immediately after a printer fault is fixed, enable the printer with the `enable` command. For more information, see the *System Administration Guide, Volume II,* in the *Solaris 2.5 System Administrator AnswerBook.*

Administering Printing

One of the main print administration tasks is managing print requests on a print server. SunSoft print clients submit their print requests directly to the print server. If the printer is available, the print request is added to the print server's queue before it is sent to the printer. While a print request is in the print server's queue, you can cancel, move, hold, resume, or change the priorities of print requests. These actions can help you keep printing services operating smoothly.

The SunSoft print commands enable you to perform all print request management tasks. Printer Manager enables you to perform some print request management tasks when you modify a print server. Table 6-3 shows whether you can perform a print request management task with Printer Manager.

Table 6-3 Print Request Management With Printer Manager

Task	Can You Do With Printer Manager?
Changing priority of print requests	No
Accepting or rejecting print requests	Yes
Processing or stopping printing	Yes

6

Changing the Priority of Print Requests

After a user has submitted a print request, you can change its priority in the print server queue in the following ways:

- You can put any print request on hold that has not finished printing. Putting a request on hold stops it, if it is currently printing, and keeps it from printing until you resume printing it. Other print requests go ahead of the on-hold request.

- You can move any print request to the head of the queue, where it will be the next job eligible for printing. If you want a job to start printing immediately, you can interrupt the job that is currently printing by putting it on hold.

- You can change the priority of a job still waiting to be printed, moving it in the queue so that it is ahead of lower-priority requests and behind requests at the same level or at a higher priority.

Accepting or Rejecting Print Requests

The `accept` and `reject` commands—or the Accept Print Requests field in Printer Manager's Modify window—enable you to turn on or turn off a print queue that stores requests to be printed.

When you use the `reject` command, the print queue for a specified printer is turned off—no new print requests can enter the queue. All print requests that are in the queue are still printed. (You must disable the printer to stop it from printing requests that are already in the queue.)

When you use the `reject` command, the print queue for a specified printer is turned off—no new print requests can enter the queue. All print requests that are in the queue are still printed. You must disable the printer if you want it to stop printing requests that are already in the queue. Table 6-4 compares the functions of the `accept/reject` and `enable/disable` commands.

*Table 6-4*   Functions of the `accept/reject` and `enable/disable` Commands

Command	Function
accept	Accept print requests that are sent to its print queue.
enable	Print the requests that are in the print queue.
reject	Reject print requests that are sent to its print queue.
disable	Stop printing requests that are currently in the print queue.

See "Processing or Stopping Printing" on page 44 for information about disabling a printer.

If a print request is rejected, the print service writes a message to the user who submitted the request, saying that print requests are not being accepted for the specified printer.

You can also use the command-line interface to specify a reason for not accepting requests. The reason will be displayed on users' systems whenever they try to check the printer's queue.

Figure 6-1 shows the point at which processing of print requests is interrupted when a print queue rejects print requests.
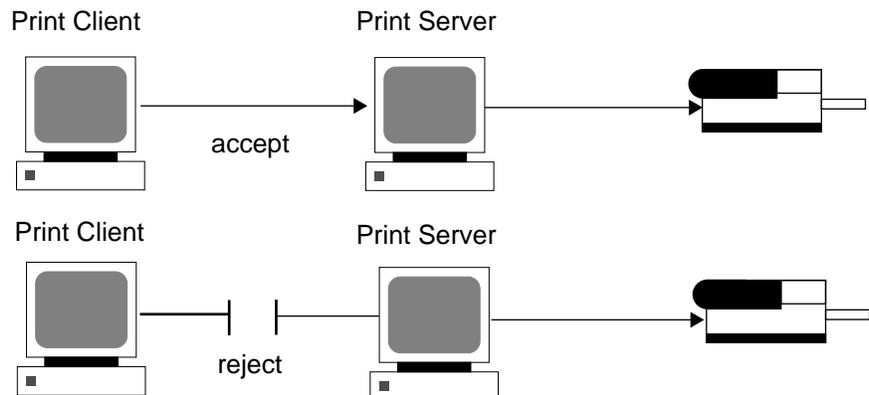
Figure 6-1   What Happens When a Print Queue Accepts or Rejects Requests

Processing or Stopping Printing

The `enable` and `disable` commands—or the Process Print Requests field on Printer Manager's Modify window—control whether a printer prints or stops printing requests that are in the print queue. When you disable a printer, the printer stops printing requests in queue; however, requests are still added to the queue. (You must set the printer to reject print requests so requests are not added to the queue. See "Accepting or Rejecting Print Requests" on page 42 for information about rejecting print requests.)

You must enable the printer whenever it has been disabled, which may happen when a printer fault occurs. When you enable a printer, it prints requests from the print queue until the queue is empty, even if the print service rejects additional requests for the print queue.

Figure 6-2 shows the point at which processing of print requests is interrupted when a printer is disabled.
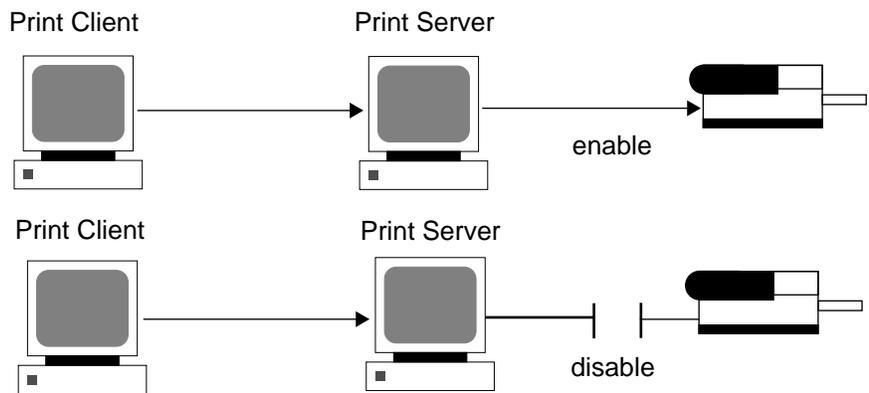
Figure 6-2   What Happens When a Printer Is Enabled or Disabled

Restarting the Print Scheduler

The print scheduler, `lpsched`, handles print requests on both a print client and print server. However, there may be times when the print scheduler stops running on a system, so print requests stop being accepted or printed.

To restart the print scheduler, you can use the `/usr/lib/lp/lpsched` command. If a print request was printing when the print scheduler stopped running, the print request will be printed in its entirety when you restart the print scheduler.

≡ *6*

Glossary

alert

A message generated by the print service to notify the system administrator, or any designated user, of printer faults.

alias

An alternative name, such as a special name assigned to a printer.

allow list

A file containing a list of users that the print service uses to control access to forms or printers. See also *deny list*.

banner page

A page printed with each print request that shows the name of the user who submitted the print request, the request ID, and when the request was printed.

baud rate

The rate at which information is transmitted between devices; for example, between a computer and a printer. Baud rate measures the number of events, or signal changes that occur in one second.

BSD print server

A print server that uses the Berkeley software distribution version of UNIX. The SunOS 4.x print server is an example of a BSD print server.

BSD printing protocol

The Berkeley software distribution printing protocol. The BSD printing protocol can communicate with BSD print servers, SVR4 (LP) print servers, and any other print server that accepts the BSD printing protocol. See also *protocol*.

daemon

A special type of program that, once activated, starts itself and carries out a specific task without any need for user input. Daemons are typically used to handle jobs that have been queued, such as printing.

default printer

The printer designated for each system as the destination for print requests when no printer name is used.

deny list

A file containing a list users who are denied access to forms or printers. See also *allow list.*

domain

A group of systems on a local network that share administrative files.

environment variable

A system- or user-defined variable that provides information about the operating environment to the shell.

Federated Naming Service

A method for uniting multiple naming services under a single interface for basic naming operations. The service supports resolution of composite names—or names that span multiple naming systems—through a naming interface. See the *Federated Naming Service Programming Guide* in the *Solaris 2.5 Software Developer AnswerBook* for information about FNS naming conventions.

filter

A file that converts a print request into a format that can be processed by a particular type of printer.

FNS

Federated Naming Service.

form

(1) A printed paper stock, such as letterhead or blank checks. (2) A software file that contains printing characteristics, such as page length, page width, number of pages, line pitch, character pitch, character set choice, ribbon color, and alignment pattern.

group 14

The sysadmin (system administration) group. Members of this group have special privileges for entering and updating restricted information in a database.

home directory

The part of the file system allocated to an individual user for private files.

initialization files

The "dot" files in a user's home directory that set the path, environment variables, windowing environment, and other characteristics to get the user set up and functioning.

login name

The name assigned to an individual user that controls access to a system.

LP print server

An SVR4 print server, or a print server that uses the LP print service software. The SunOS 5.x print server is an example of an SVR4 (LP) print server.

name service

A distributed network database that contains key system information about all the systems on a network, so the systems can communicate with each other. With a name service, the system information can be maintained, managed, and accessed on a networkwide basis. Sun supports the NIS (formerly YP) and NIS+ name services. Without a name service, each system has to maintain its own copy of the system information (in the local /etc files).

None

In the Printer Manager application, None means that printer configuration information is stored in a file on the user's local system (the /etc/printers.conf file) rather than being stored in a network name service (NIS or NIS+).

NIS

Network Information Service (formerly YP). The name service that is standard on SunOS 3.x, 4.x, and Solaris 1.x systems.

NIS+

Network Information Service, Plus. The replacement for NIS that provides automatic information updating and adds security features such as authorization and authentication. NIS+ is the standard on Solaris 2.x systems.

OpenWindows

A windowing system based on the OPEN LOOK™ graphical user interface.

parse

To divide a string of characters or series of words into parts to determine their collective meaning. Virtually every program that accepts command input must do some type of parsing before the commands can be acted upon.

path name

A series of directory names, separated with slashes (/), that specifies the location of a file.

print client

Any system on a network that has printing services provided by a print server.

print configuration interface

A set of resources that the print commands use to locate printer names and printer configuration information. The SunSoft print configuration resources include the command-line interface, user files, the system's printer configuration file (`/etc/printers.conf`), and the name service (NIS or NIS+), if any.

print queue

A temporary lineup of print requests waiting to be printed on a printer.

print request

A file to be printed. Also called *print job*.

print server

Any system that has a printer physically attached to it and makes the printer available to other systems on the network.

print spooler

Software that intercepts a print request on its way to the printer and sends it to disk or memory instead, where the print request is held until the printer is ready for it. The term "spool" is an acronym for "simultaneous peripheral operations online."

Printer Manager

A Solstice AdminSuite application for setting up and managing print servers and print clients, used instead of the print service's command-line interface. The Printer Manager application is included in the Solstice Launcher.

protocol

A formal description of messages to be exchanged and rules to be followed for two or more systems to exchange information.

request ID

    The identification number assigned by the print service to each print request.

shell

    The command interpreter for a user, specified in the `Passwd` database. The Solaris environment supports the Bourne, C, and Korn shells.

spool

    An acronym for "simultaneous peripheral operations online." See also *print spooler* and *spooling directory*.

spooling directory

    A directory in which files are stored until they are processed. For example, print requests may be stored in a spooling directory before they are processed.

SVR4 print server

    A print server that uses the LP print service software. The SunOS 5.x print server is an example of an SVR4 print server.

system

    A generic term for a computer that enables a user to run computer programs.

Solstice AdminSuite Print Administration Guide—January 1997

Index

Symbols

`.printers` file
   creating, 26
   use as print configuration
      resource, 10, 11

Numerics

4.x systems, converting printer
   information from, 19
5.x systems, converting printer
   information from, 19

A

`_all` printer alias, creating, 27
`accept` command, 42
accepting print requests, 42
administering printing, 41 to 45
AdminSuite, *See* Solstice AdminSuite
aliases for printers, creating, 26
allow list, 38
AnswerBook, related guides in, xiv

B

BSD print servers, 13
BSD printing protocol, 13

C

`cancel` command, 30
changing
   See also modifying
   priority of print requests, 42
comparison of LP and SunSoft print
   features, 2
`conv_lp` command, 31
   using, 18, 19
`conv_lpd` command, 31
   using, 18, 19
conventions, typographic, xv
converting printer information
   SunOS 4.x systems, 19
   SunOS 5.x systems, 19
converting to SunSoft print, 16 to 21

D

`_default` alias, creating, 26
default printer, setting
   with `lpadmin` command, 37
deny list, 38
`disable` command, 44

E

`/etc/lp/printers` directory, 18